Matching and Mapping to DOD Standard Data

12 July 96

MEMORANDUM FOR FUNCTIONAL AND COMPONENT DATA ADMINISTRATORS

SUBJECT: Dissemination of "Baselining the Use of DOD Data Standards: Matching and Mapping to Standards"Guidelines

1. Enclosed is the DOD data administration procedural guidance on matching and mapping application data to DOD standard data elements. Previously guidance on this topic was entitled "Using DOD Data Standards: Matching and Mapping to Standards." The title change has been made to more accurately reflect the purposes for matching and mapping data elements to DOD data standards.

As one of the initial steps toward the implementation of DOD data standards, this guidance describes the data engineering tasks required to baseline the data standards that are used in the Department' s automated information systems (AIS). Baselining the data standards, provides for the evolutionary adoption of data standards in conjunction with improving data sharing, data interchange, and our ability to get the correct information to the Warfighter at the right time.

2. The attached guideline applies to Department of Defense data engineering efforts to implement data standards. This guide updates early drafts and illustrates how the DDDS is to be used to register the use of DOD standard data elements. This guidance is released in accordance with the authority contained in the DOD Directive 8320.1-M, Data Administration Procedures. It is forwarded for widest dissemination possible.

3. My POC for this matter is Ms. Toni Weir, DISA/JIEO/CFCSE/JEXD, DSN: 761-2384, Commercial: (703)681-2384, FAX: 761-0518 or commercial (703) 681-0518, or INTERNET address: weirt@ncr.disa.mil.

DIANN L. McCOY, DOD Data Administrator

1 Enclosure a/s

June 20, 1996

Baselining the Use of DOD Data Standards: Matching and Mapping to Standards

Version 1.0

Defense Information Systems Agency Joint Interoperability and Engineering Organization
Center for Computer Systems Engineering DII Computer Engineering Department

---

TABLE OF CONTENTS

TABLES:

FIGURES:

INTRODUCTION

This guidance is focused on the data engineering analyses that are required to baseline the use of DOD standard data elements in DOD automated information systems (AIS). As an initial step in implementing data standards, recording the relationship between application data and existing data standards is critical.

First, matching and mapping application data to standard data elements establishes a baseline of standard data elements that are used by an AIS. Second, the creation of the baseline allows AIS designers and developers to measure progress towards implementing standard data elements. Third, the implementation of data standards is closely tied to improving data sharing, data interchange, and our ability to get the correct information to the Warfighter at the right time.

Importantly, improving data sharing, system integration, data quality and utility are critical Command, Control, Communications, Computers and Intelligence (C4I) interoperability goals. These C4I For The Warrior (C4IFTW) goals have driven the establishment of over 11,000 data standards that are stored in the Defense Data Dictionary System (DDDS). These goals are the central theme of the DOD data standardization initiative which emphasizes the importance of improving the Warfighter's information as a key ingredient in maintaining mission readiness, improving reliability and enhancing effectiveness through technological superiority.

Return to Table of Contents

GENERAL CONSIDERATIONS ON REGISTERING THE USE OF DOD DATA STANDARDS

This guidance focuses on the matching and mapping of application data to existing DOD standard data elements. Matching and mapping application data to DOD data standards establishes what data elements in an existing AIS are similar or dissimilar to the data standards that have been approved by the Department. In addition, understanding what DOD standard data elements are used in an AIS fulfills four requirements:

- (1) Support the evolutionary adoption of standard data elements in parallel with modernizing, enhancing, modifying, and improving systems. With an understanding of what standard data elements are used in an AIS, design and development activities can schedule the implementation of additional standard data elements in connection with future system releases.

- (2) Support the migration of data from existing data stores/databases to databases containing DOD standard data. Understanding the relationship between application data and existing standard data elements eases the transition to data standards as well as the extraction and load of application data to databases that have been created from DOD data standards.

- (3) Provide an opportunity to improve standard data elements. For example, in recording the relationship between an application data element and an existing standard data element, recommendations may be generated on changing an access name or data type, or field length.

- (4) Facilitate the capture of performance metrics established by the Department. Under Section 381 of the National Defense Authorization Act for Fiscal Year 1995, Congress mandated the use of metrics to measure progress toward information technology goals. One of the metrics is the number and percentage of DOD standard data elements that are used in migration systems (through the use of DOD standard data elements or mapping non-standard data to DOD standard data).

The matching and mapping of application data to data standards is generally referred to as registering the use of data standards. DOD 8320.1 series guidance on data standardization provides for this registration in the Defense Data Dictionary System (DDDS). Currently, the DDDS recognizes two types of registration. First, in support of migration planning and the eventual use of data standards, the DDDS facilitates the recording of matches and mappings for planning purposes. This type of registration is quite simple in that it only requires the recording of whether an application data element matches or can be mapped to an established standard. The second type of matching and mapping requires more rigor. For AIS managers that are designing AIS capabilities or moving data from legacy systems to databases that use DOD data standards, the DDDS supports recording the business rules that define the relationship between the legacy application data elements and DOD data standard(s). Several types of relationships are illustrated in this document. They include recording subset matches, documenting how application data can be derived from data standard(s), and recording differences between application data and established DOD standards.

Generally, it is important to note that the decision to match and map for planning purposes and/or for design purposes is guided by AIS lifecycle considerations. As shown in Figure 1, matching and mapping for planning purposes is performed either early in the system lifecyle or in situations where systems are implemented and/or deployed. This type of matching and mapping is performed to support the future use of data standards. The second type of matching and mapping is typically more appropriate in situations where analysis and design tasks are being performed. It should be noted, however, that matching and mapping for design purposes may be performed in situations where implemented or deployed systems are to be modernized,

enhanced, modified, or improved.

Return to Table of Contents

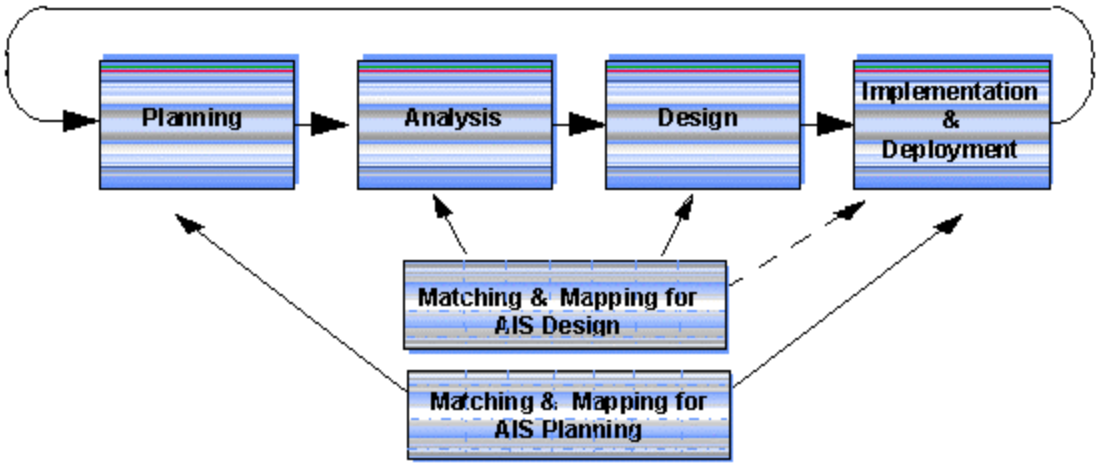

Figure 1: Using Data Standards: Match and Mapping Occurs Throughout the AIS Lifecycle.

Matching and mapping should be done to approved or candidate DOD data standards. In situations where an application data element is mapped to a data element(s) that is in development as a DOD data standard, coordination with the appropriate functional data steward is recommended. Since many of the data elements under development are not based on the functional requirements that are described by a data model, these data elements may never be proposed as candidate data standards nor approved as DOD data standards. Matching and mapping to developmental data is may be equivalent to registering the use of nonstandard data and therefore is the lowest level of compliance and is considered to be high risk. This is particularly true in situations where the developmental data element is not being worked into the DOD Data Model through the data standardization process.

Return to Table of Contents

MATCHING VS. MAPPING

Table 1 provides information on criteria used to match or map application data to DOD data standards. Matching data elements requires that certain data characteristics be either equivalent or identical. An application data item that matches a DOD data standard must have the same potential values. Equivalent characteristics do not have to be identical but should be similar and include: Definition Text, Data Type Name, Maximum Character Count Quantity, High-Range Identifier, and Low-Range Identifier. Identical characteristics are: Decimal Place Count Quantity, Domain Value Identifiers, Domain Value Identifier Text, Unit of Measure Name, and Security Classification Name. If any of the required metadata for an application data element is missing or unknown (e.g., Maximum Character Count Quantity or Unit of Measure Name or Security Classification) the application data element must be considered a mapping. Mapped data elements do not require that all characteristics be the same. Nevertheless, there are several characteristics that should be equivalent: Definition Text, Domain Value Identifiers, Domain Value Identifier Text and Unit of Measure Name. A characteristic that must be identical to

support the mapping of an application data element to a DOD data standard is Security Classification. Importantly, if matching and mapping is being performed for design purposes, an application data element that is mapped to a DOD standard data element must be supported by the documented business rules that define the relationship. In matching and mapping application data elements to DOD standard data elements, it should be noted that a special kind of matching may be applied. As shown in Table 1, data elements that use domain value subsets represent a special type of mapping to established DOD standards. It should also be noted that it is the responsibility of the Functional Data Administrator (FDAd) and functional area experts to support the matching and/or mapping of application data elements to DOD data standards. This is typically performed in conjunction with automated information system (AIS) design and development efforts where the system developer is also involved.

Personnel performing matching and mapping should be prepared to use a variety of sources for completing the registration of application data to standards. For example, most if not all the characteristics listed in Table 1 may be found in the database specification or data dictionary that supports an application. In addition, the existing database schema or file description section for an application is another source of information. Database schemas and file sections typically contain information such as: Access Name (i.e., column name), Data Type Name, and Maximum Character Count Quantity. Domain or reference tables that are used by the application are also valuable sources of information on Domain Value Identifiers and Domain Value Identifier Text.

Table 1: Match/Map Criteria

Attributes	Matching	Mapping	Matching and Mapping Notes
Name	Not Mandatory	Not Mandatory	Functional name for data element.
Class Word	Equivalent, if the application data carries a class word	Equivalent, if the application data carries a class word	Not mandatory in situations where application data elements do not carry a class word designation. If a class word does exist, the class words for application data elements are to be equivalent to the class word of the approved DOD data standard (e.g., NAME as a class word is equivalent to TEXT; The class word CODE, however, is not equivalent to NAME or TEXT.
Access Name	Not Mandatory	Not Mandatory	It is not likely that the access name for an existing application data element will be identical to the access name stored in the DDDS. In addition, requiring an equivalent access name is not meaningful. For these reasons, the access name does not have to be identical or equivalent. It should be noted, however, that developers should use the DDDS access name in implementing standard data elements, wherever practical.

Definition Text	Equivalent	Equivalent	Word for word definitions may be rare. For atomic data, definition should be similar. For derived or composite data, definitions are different, but should, in part, be related to the standard.
Data Value Source List Text	Not Mandatory	Not Mandatory	Use of the same reference text is a good indicator that the application data element is the same as the DOD data standard. However, several references may contain identical information.
Data Type Name	Equivalent	Not Mandatory	Matching/Mapping Note: See discussion on DDDS and SQL data types.
Maximum Character Count Quantity	Equivalent	Not Mandatory	Matching/Mapping Note: See discussion on DDDS data types, signed data, DATE as data type and field lengths.
Decimal Place Count Quantity	Identical	Not Mandatory	Used on quantitative data elements to record scale.
Domain Value Identifiers	Identical	Equivalent	For an application data element with specific domain values, all domain value identifiers must be identical to the standard to have a match. This includes the Domain Value Identifier Text. Data elements with subsets of the standard domain values are a subset match.
Domain Value Identifier Text	Identical	Equivalent	The domain value text for the application data element must also be identical to have a match. Voids and subsets to the standard domain value text are subset match.
High-Range Identifier	Equivalent	Not Mandatory	See discussion on signed data, DATE as data type, and field lengths.
Low-Range Identifier	Equivalent	Not Mandatory	See discussion on signed data, DATE as data type, and field lengths.
Unit of Measure Name	Identical	Equivalent	Applies to quantitative data elements. (E.G.., Pounds, Liters)

Security Classification Name	Identical	Identical	Security classification must be the same.
Formula Definition Text	Equivalent	Not Mandatory	For matching purposes, formula for deriving a application data element from other application data should be equivalent to formula used to derive a data standard from other data standards.

Table 1: Match/Map Criteria

Return to Table of Contents

In matching application data to DOD standards, there are several aspects that deserve attention. First, some of the critical criteria are:

- (1) Definition must be equivalent.
- (2) Data Type must be equivalent.
- (3) Maximum Character Count Quantity (Field Length) must equivalent.
- (4) For fixed decimal place data items, the numeric digits allowed to the right of the decimal point must be the same.
- (5) For data items using the class word CODE, the application data element must make use of all the allowable Domain Value Identifiers AND the associated Domain Value Description Text. Subset mappings are identified when an application data item implements a subset of the valid Domain Value Identifiers and Domain Value Descriptions
- (6) For quantitative data elements, the Low Range Identifier and High Range Identifier must be equivalent.
- (7) For quantitative data elements, Units of Measure must be the same (e.g., pounds, feet, meters).

In matching and mapping data elements, personnel are advised to exercise common sense in applying these rules. For example, a second consideration is illustrated in the following table. This table shows the DDDS data types and equivalents under SQL, Sybase and Oralce:

Return to Table of Contents

Table 2: DDDS Data Types and Equivalents

DDDS Data Types	SQL Data Types	Sybase Data Types	Oracle Data Types
Character-	CHAR(n),CHAR	CHAR(n), VARCHAR(n),	CHAR(n),

String	VARYING(n)	TEXT(n)	VARCHAR2(n), LONG
Integer	INTEGER, SMALLINT	INT, SMALLINT	NUMBER
Fixed-Point	NUMERIC(p,s), DECIMAL(p,s)	NUMERIC(p,s), DECIMAL(p,s)	NUMBER(p,s)
Floating-Point	FLOAT(b), DOUBLE PRECISION, REAL	FLOAT(b), DOUBLE PRECISION, REAL	NUMBER, FLOAT(b)
Bit-String		IMAGE	RAW(n), LONG RAW

Table 2: DDDS Data Types and Equivalents

Return to Table of Contents

Two additional considerations influence the matching and/or mapping decision. First, the DDDS may record the low range for a standard data element by placing a negative sign in the Low Range Identifier. For example, the low range for a standard data element may be -999.99 with the Maximum Character Count Quantity documented at seven (7) to account for the negative sign and the decimal point. Since many commercial off the shelf (COTS) database management systems (DBMS) handle both signed data and the placement of the decimal point through the use of precision and scale variables, the application data element matches the standard where the appropriate precision and scale is used to represent the application data item. For example, under SQL compliant databases the following is equivalent to the DDDS specification for -999.99: NUMERIC(5,2). Some additional high range/low range values and the data specifications supporting these values are shown in the Table below.

Table 3: DDDS High Range/Log Range Values and Physical Data Specifications

High Range/Low Range	SQL Data Types	Sybase Data Specification	Oracle Data Specification
+999999.99/-999999.99	NUMERIC, DECIMAL	NUMERIC(8,2)	NUMBER(8,2)
+99.9999/-99.9999	NUMERIC,DECIMAL	NUMERIC(6,4)	NUMBER(6,4)
+9999.99999/-9999.99999	NUMERIC,DECIMAL	DECIMAL(9.5)	NUMBER(9,5)
+99.9/-99.9	NUMERIC,DECIMAL	DECIMAL(3,1)	NUMBER(3,1)

Table 3: DDDS High Range/Log Range Values and Physical Data Specifications

Return to Table of Contents

The second consideration in matching and mapping application data to standards involves the

use of DATE as a data type. Currently, standard data elements in the DDDS record date and time as: YYYYMMDD and HHMMSS. The maximum character count quantity for both date and time is eight (8). Since many COTS DBMS make use of DATE as a data type to handle both date and time, an application data element may match the standard where the application data specification uses the data type DATE for recording both date and time. For example, under Oracle the data type DATE is valid for DATE variables between 1 Jan 4712 BC and 1 Jan 4712 AD. Under these circumstances, the use of the DATE data type matches the DDDS specification.

Return to Table of Contents

MATCHING DATA ELEMENTS

For an application data element to match a DOD data standard, all data characteristics that describe the potential data values must be identical. The range of values and the meaning of the values must be the same. As seen in Table 1, the data element names nor the access names (at this time) do not have to match. However, matching access names, the names used in the database schema, will facilitate data sharing and systems interoperability. While definitions do not have to match word for word, the definitions should describe the same concept. For example, Table 4 illustrates an application data element from the Global Command and Control System (GCCS) AIRFIELDS application that matches the DOD data standard for country code. All significant data characteristics, including all domain value identifiers and domain value identifier text, are identical.

Return to Table of Contents

Table 4: Matching Example

Attributes	DOD Data Standard	AIRFIELDS
Name	COUNTRY CODE	COUNTRY CODE
Class Word	CODE	CODE
Access Name:	CY-CD	CY_CD
Definition Text:	THE CODE THAT REPRESENTS A COUNTRY.	THE CODE THAT REPRESENTS A COUNTRY.
Data Value Source List Text:	FEDERAL INFORMATION PROCESSING STANDARD PUBLICATION 10-3,...	AAFIF Product Specification
Data Type Name	CHARACTER-STRING	CHAR
Maximum Character Count Quantity	2	2
Decimal Place Count Quantity	NA	NA

Domain Value Identifiers & Domain Value Identifier Text	ID TEXT AF AFGHANISTAN AG ALGERIA AL ALBANIA AN ANDORRA AO ANGOLA AQ AMERICAN SAMOA AR ARGENTINA AS AUSTRALIA AU AUSTRIA : :	ID TEXT AF AFGHANISTAN AG ALGERIA AL ALBANIA AN ANDORRA AO ANGOLA AQ AMERICAN SAMOA AR ARGENTINA AS AUSTRALIA AU AUSTRIA : :
High Range Identifier	NA	NA
Low Range Identifier	NA	NA
Unit of Measure Name	NA	NA
Security Classification Name	UNCLASSIFIED	UNCLASSIFIED
Formula Definition Text:	NA	NA

Table 4: Matching Example

Return to Table of Contents

MAPPING TO DATA STANDARDS

Application elements can also be mapped to DOD standard data elements to support the evolutionary transition to the use of DOD data standards and/or to meet Congressional mandates on performance metrics. Application data elements that are mapped to DOD data standards for design purposes must record the business rules that are used to define the relationship between the application data element and the data standard(s). Four types of mappings are possible:

(1) Subset Matches to DOD data standards.

(2) Atomic application data elements to DOD data standards.

(3) Concatenated/composite/compound application data elements to DOD data standards.

(4) Calculated application data elements to DOD data standards.

In mapping application data elements to DOD data standards for design purposes, all variances between the data characteristics of the application data element and the data characteristics of the standard data element will need to be recorded. For example, differences may include a formula or algorithm used to derive the application data element from two or more DOD data standards.

Return to Table of Contents

SUBSET MATCHES: MAPPING DESIGNATION

Application data elements that are a subset of the domain values established by the DOD data standard will be documented as a subset match to the standard. For example, applications using only the country codes for North Atlantic Treaty Organization (NATO) nations, may use a subset of the FIPS 10-3 country codes shown in Table 5.

When an application data element is identified as a subset match to an existing data standard the application data element is entered to the DDDS as a nonstandard data element. After entry, the DDDS functions for establishing a relationship between a nonstandard (i.e., application data item) and a standard data element should be used (See following discussion on Registration of Application Data to DOD Data Standards).

Return to Table of Contents

Table 5: Example of a Subset Match To Existing DOD Data Standard

Attributes	DOD DATA STANDARD	NATO COUNTRY CODE
Name	COUNTRY CODE	NATO_COUNTRY CODE
Class Word	CODE	CODE
Access Name:	CY-CD	NATO_CTRY_CD
Definition Text:	THE CODE THAT REPRESENTS A COUNTRY.	THE CODE THAT DENOTES A COUNTRY WITH MEMBERSHIP IN THE NORTH ATLANTIC TREATY ORGANIZATION.
Data Value Source List Text:	FEDERAL INFORMATION PROCESSING STANDARD PUBLICATION 10-3,...	
Data Type Name:	CHARACTER-STRING	CHAR
Maximum Character Count Quantity	2	2
Decimal Place Count Quantity	NA	NA
Domain Value Identifiers & Domain Value Identifier Text	ID TEXT : : BE BELGIUM : : CA CANADA	ID TEXT BE BELGIUM CA CANADA

	: : DA DENMARK : : FR FRANCE : :	DA DENMARK FR FRANCE : :
High Range Identifier	NA	NA
Low Range Identifier	NA	NA
Unit of Measure Name	NA	NA
Security Classification Name	UNCLASSIFIED	UNCLASSIFIED
Formula Definition Text:	NA	NA

Table 5: Example of a Subset Match To Existing DOD Data Standard

Return to Table of Contents

ATOMIC DATA ELEMENT MAPPINGS

Atomic data elements are data elements that represent a single concept. Table 6 provides information on three atomic data elements for the identification of countries. Although, the data element names are similar, other data characteristics are not the same. Critical differences are shown in Domain Value Identifiers and Domain Value Definition Text. For example, although the application data element, from the Air Force Flying Training Programming and Accounting System (FTPAS), uses many of the same domain values as under the DOD data standard (e.g., AR = ARGENTINA), the application data element is missing the value for AMERICAN SAMOA and has a different Domain Value Identifier for AUSTRALIA (i.e. AT).

In using the DDDS to record the mappings between FTPAS elements and the DOD data standard, the variance from the standard should be entered to the DDDS (See following discussion on Registration of Application Data to DOD Data Standards).

Return to Table of Contents

Table 6: Atomic Mapping Example

Attributes	DOD Data Standard	External Standard Data Element	Application Data Element
Name	COUNTRY CODE	COUNTRY CODE	COUNTRY CODE
Class Word	CODE	CODE	CODE
Access Name	CY-CD	CTRY-CD	COUNTRY

Definition Text	THE CODE THAT REPRESENTS A COUNTRY.	THE CODE THAT DENOTES A COUNTRY.	
Data Value Source List Text	FIPS 10-3	ISO 3166	AIR EDUCATION AND TRAINING COMMAND (AETC) PAMPHLET 51-6
Data Type Name	CHARACTER-STRING	CHARACTER-STRING	CHARACTER-STRING
Maximum Character Count Quantity	2	2	2
Decimal Place Count Quantity			
Domain Value Identifiers & Domain Value Identifier Text	ID TEXT AF AFGHANISTAN AG ALGERIA AL ALBANIA AN ANDORRA AO ANGOLA AQ AMERICAN SAMOA AR ARGENTINA AS AUSTRALIA AU AUSTRIA : :	ID TEXT AF AFGHANISTAN DZ ALGERIA AL ALBANIA AD ANDORRA AO ANGOLA AS AMERICAN SAMOA AR ARGENTINA AU AUSTRALIA AT AUSTRIA : :	ID TEXT AF AFGHANISTAN AG ALGERIA AL ALBANIA AN ANDORRA AO ANGOLA AR ARGENTINA AT AUSTRALIA AU AUSTRIA : :
High Range Identifier			
Low Range Identifier			
Unit of Measure			
Security Classification	Unclassified	Unclassified	Unclassified
Formula Definition			

Table 6: Atomic Mapping Example

Return to Table of Contents

CONCATENATED DATA ELEMENT MAPPINGS

Sometimes, application data elements are concatenated or grouped. A concatenated data element is a data element that is not single concept. Figure 2 illustrates the mapping between contract number and established data standards.

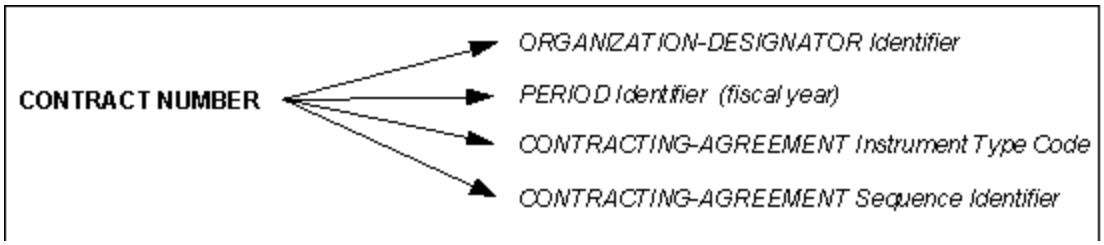

Figure 2: Concatenated Data Example

Contract number as the application data element should be loaded in the nonstandard partition of the DDDS and mapped to each of the standards represented by the four data items. The business rule(s) that describe the grouping should be entered in the DDDS. For example, for design purposes the following information should prove useful in adopting the DOD data standard for contract number. The application data elements appear in **BOLD** text and the DOD standards appear in *italics*

CONTRACT NUMBER consists of the following DOD standard data elements:

- 1 - 6 *ORGANIZATION-DESIGNATOR Identifier*

  7 - 8 *PERIOD Identifier* (fiscal year)

  9 *CONTRACTING-AGREEMENT Instrument Type Code*

  10 - 13 *CONTRACTING-AGREEMENT Sequence Identifier*

DERIVED DATA ELEMENT MAPPINGS

Application data elements can be calculated or derived from DOD data standards. Importantly, many derived data elements may be stored and shared across the Department. In these situations, derived data may be entered into the DOD data standardization process. For derived data elements that are not candidates for standardization, these application data elements are entered into the DDDS as nonstandard data and are mapped to DOD standards. For derived data elements most of the data characteristics will differ from the characteristics of the standard data element. Table 7 illustrates three application data elements that map to multiple DOD data standards. These examples are taken from the GCCS AIRFIELDS application.

Return to Table of Contents

Table 7: Derived Data Elements Mapped to DOD Data Standards

DOD Data Standard	Application Data Element
AIRPORT-APRON-TYPE WIDTH DIMENSION AIRPORT-APRON-TYPE LENGTH DIMENSION	APRON TOTAL SQUARE AREA

AIRPORT-DINING-FACILITY NORMAL PERSONNEL COUNT QUANTITY AIRPORT-DINING-FACILITY PERSONNEL TYPE CODE	OFFICERS MESSING NORMAL QUANTITY
AIRPORT EQUIPMENT TYPE COUNT QUANTITY AIRPORT-EQUIPMENT CATEGORY CODE	CRASH EQUIPMENT CODE

Table 7: Derived Data Elements Mapped to DOD Data Standards

Return to Table of Contents

In mapping derived data elements for AIS system design purposes, the business rules that describe the derivation or calculation between application data elements and standards should be entered to the DDDS. Derivations can be entered using pseudo-code, SQL statements, algebraic or numeric formulas, or a clear set of English statements. Listed below are examples of SQL statements that define the relationship between a nonstandard data item and DOD standard data elements. The application data elements appear in **BOLD** text and the DOD standards appear in *italics*

- (1) **APRON TOTAL SQUARE AREA**
- Definition Text:
  - Total square feet to the nearest foot of all aprons with equal characteristics.

  VARIANCE TEXT:
  - **APRON TOTAL SQUARE AREA =**

  SELECT *airport-apron-type width dimension * airport-apron-type length dimension*

  FROM *airport-apron-type*

(2) **OFFICERS MESSING NORMAL QUANTITY**

- Definition Text:
  - The maximum quantity of personnel that can be fed at a commissioned officers airport dining facility.

  VARIANCE TEXT:
  - **OFFICERS MESSING NORMAL QUANTITY =**

  SELECT *airport-dining-facility normal personnel count quantity*

  FROM *airport-dining-facility*

  WHERE *airport-dining-facility personnel type code* = "O"; (officer)

(3) **CRASH EQUIPMENT CODE**

- Definition Text:

  The code that represents the appropriate availability of ambulances or other emergency vehicles such as Rescue Vehicles, etc.

  VARIANCE DESCRIPTION TEXT:

  - **CRASH EQUIPMENT CODE =**

    - SELECT *airport equipment type count quantity*

      INTO temp_variable

      FROM *airport-equipment-type*

      WHERE *airport-equipment category code* = "C"; (Crash Equipment)

    If (temp_variable > 0) then

    - **CRASH EQUIPMENT CODE** = "A"; (available)

    else

    - **CRASH EQUIPMENT CODE** = "N"; (none)

    endIf

  NOTE: Domain values E (estimated) and U (unknown) can not be determined from the standard data element.

It should be noted that in situations where the application data element is derived from the standard through the use of overly complex algorithms or can not be derived from the standards, that consideration should be given to adopting the application data as an existing data standard. This is particularly true in cases where the data is shared between applications or functional areas and where data acquisition methods and procedures will not be changed in the foreseeable future. Derivations that are lengthy (1-2 pages of SQL statements) are considered overly complex. As suggested above, application data that is derived may be entered into the DOD data standardization process.

Return to Table of Contents

REGISTRATION OF APPLICATION DATA TO DOD DATA STANDARDS

Application data elements that are matched or mapped to DOD data standards should be entered in the DDDS as nonstandard data elements. To batch load application data to the DDDS, batch load Format 7 is used. Appendix A provides the Format 7 fixed length format. The DDDS also supports the use of ASCII delimited files to support the batch entry of application data.

In registering application data to DOD data standards, special attention should be given to

recording information. Some data is required while other data is optional. For example, in matching and mapping application data elements for both planning and design purposes, the reason for performing the registration is recorded in the MATCH_MAP_REL_CD field (see Table 7). The DDDS allows one of two values to be entered: "P" for Planning or "D" for design.

The second mandatory entry to the DDDS, in matching and mapping application data to standards, is to record whether an application data element matches or maps to a data standard. This is recorded in the MATCH_MAP_TYPE_CD field of the NDESDE table. The DDDS allows one of two values to be entered: "1" = Match or "2" = Mapped.

Two fields in the DDDS are used to record additional information on application data elements that map to DOD data standards. The MAP _TYP_CD field is used to record four possible relationships that exist between an application data element and a standard. These relationships are coded as:

- (1) "S" = Application data element contains a Subset of DOD standard domain values.
- (2) "A" = Application data element is Atomic but, not identical to DOD standard.
- (3) "C" = Application data element is Concatenated.
- (4) "D" = Application data element can be Derived from DOD standard(s).
- (5) "U" = Relationship between the application data element and DOD standard is Unknown

The second field in the DDDS is used to record how an application data element varies from the DOD data standard. Several types of variances have been illustrated above in connection with concatenated data and derived data. Another illustration of the type of information entered to the REL_DESC_TEXT field of the DDDS is provided below. In this case, the field carries information about how the country codes found under the AIR EDUCATION AND TRAINING COMMAND (AETC) PAMPHLET 51-6 varies from the DOD data standard.

COUNTRY CODE

- VARIANCE TEXT (REL_DESC_TEXT field of DDDS):

  Differences between the DOD standard for *country code* and **COUNTRY CODE** under AETC 51-6 are as follows:

DOD Data Standard	AETC 51-6
AQ AMERICAN SAMOA	No domain value OR domain value description.
AS AUSTRALIA	AT AUSTRALIA
: :	: :

There are two ways under the DDDS to establish the relationship between the application data

and the DOD data standard. For large numbers of application elements, the DDDS batch load format 16 can be used to record the relationship. Table 8 shows the fixed length format for this batch load. It can also be entered as an ASCII delimited file.

For a small number of application data elements, the alternate method for entering the relationship between application data and DOD data standards is to use the DDDS data entry screens shown in Figure 3. Using this function:

(1) the user may input the counter identifier for the application data element (nonstandard, if available) OR the application data element name (nonstandard data element name) to identify the nonstandard member of the relationship.

(2) the user may input the DOD standard data element name OR counter identifier and version to identify the standard member of the relationship pair.

(3) a nonstandard data element may be paired with one or many standard data elements; and a standard data element may be paired with one or many nonstandard data elements. This capability is essential for concatenated and derived data elements.

Return to Table of Contents

Table 8: DDDS Fixed Length Format 16 - Standard/Nonstandard Relationships

Field Name	Start Pos	End Pos	Size	Descriptive Field Name	Values/Comments
NDE_NM	1	250	250	Non standard Data Element Name	Required if NDE counter is not available.
NDE_COUNTER	251	258	8	Nonstandard Data Element Counter ID	If available is Required.
SDE_NM	259	508	250	Standard Data Element Name	Required if SDE counter is not available.
SDE_COUNTER	509	516	8	Standard Data Element Counter ID	Required if SDE name is not entered.
SDE_VER_NR	517	520	4	Standard Data Element Version Number	Required.
NAME	521	620	100	Application Name	Required if NDE counter and Application ID are not specified.
APP_U	621	628	8	Application ID	Required if application name is not specified or not unique.
CREATOR_ID	629	636	8	Relationship Creator Identifier	Required.
MATCH_	637	637	1	Match or mapped	Required for matching/mapping

MAP_REL CD				relationship reason code	
MATCH-MAP-TYPE_CD	638	638	1	Match or mapped relationship designator code	Required for matching/mapping
MAP_TYP _CD	639	639	1	Mapped relationship type code	Required for mapping data elements.
REL_DES C_TEXT	640	163 9	999	Mapped relationship variance description text	Optional
NDESDE_ MOD_USE R_ID	1640	164 7	8	Relationship Modifier ID	
NDESDE_ MOD_USE R_GRPID	1648	165 5	8	Relationship Modifier Group ID	
NDESDE_ MOD_DT					
1656	1663	8	Relationship Modification Date		
NDESDE_ MOD_TM	1664	167 1	8	Relationship Modification Time	

Table 8: DDDS Fixed Length Format 16 - Standard/Nonstandard Relationships

Return to Table of Contents

Importantly, the DDDS screen layouts also allows for entering the reason code for making the relationship between an application data element and the DOD data standard. In addition, the user records whether the application data element matches or maps to the DOD data standard by checking the appropriate relationship designator code. For users that are matching and mapping data elements for design purposes AND have recorded a mapped relationship, the DDDS will require the entry of the relationship type code information shown in Figure 3.

After completing this information, the user is allowed to enter data about the relationship between the application data item and the DOD data standard. The DDDS screen layout that provides for this entry is shown in Figure 4. This screen displays both the application data element counter identifier and the name of the application data element (Non Std Data Element Counter & Non Std Data Element Name). In addition, the standard data element counter identifier and version number and standard data element name are displayed (Std Data Element Counter, Std Data Element Version, Std Data Element Name). Beneath this information, the user is allowed to enter variance information. Querying the matched-mapped relationship will be

developed in increments.

Return to Table of Contents

```
                         CREATE/DELETE NDE
          ________________________________________________________

Non Std Data Element Counter:   (- - 8 - -)

Non Std Data Element Name:  ( - - - - - - - - - - - - - - - 250 - - - - - - - - - - - - - -  - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - )

Std Data Element Counter:               (- - 8 - -)

Std Data Element Version Number:  (- 3 -)

Std Data Element Name: ( - - - - - - - - - - - - - - - 250 - - - - - - - - - - - - - -  - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - )
*Match-Map Relationship Reason Code:

*Match-Map Relationship Designator Code:

 *Match-Map-Relationship Type Code:

                 F3 = SAVE to continue;   F2 = CHOICES
          F6 = CANCEL; F8/F1 = CLR FORM; F8/F5 NEXT PAGE
```

Figure 3: DDDS Screen, Create/Delete NDE Relationship

Note: Numbers provided in figure are field lengths in DDDS.

Currently, DDDS users can use the report generation menu (Option 9 under the DDDS main menu) to get a report on the application data elements that are related to a standard. Option 12 of the report generation menu allows the DDDS user to enter the counter id for the standard data element and provides information about the data element including matching and mapping information. Forthcoming changes to the DDDS will provide a direct query capability providing information on match-mapped relationships and all related information.

Return to Table of Contents

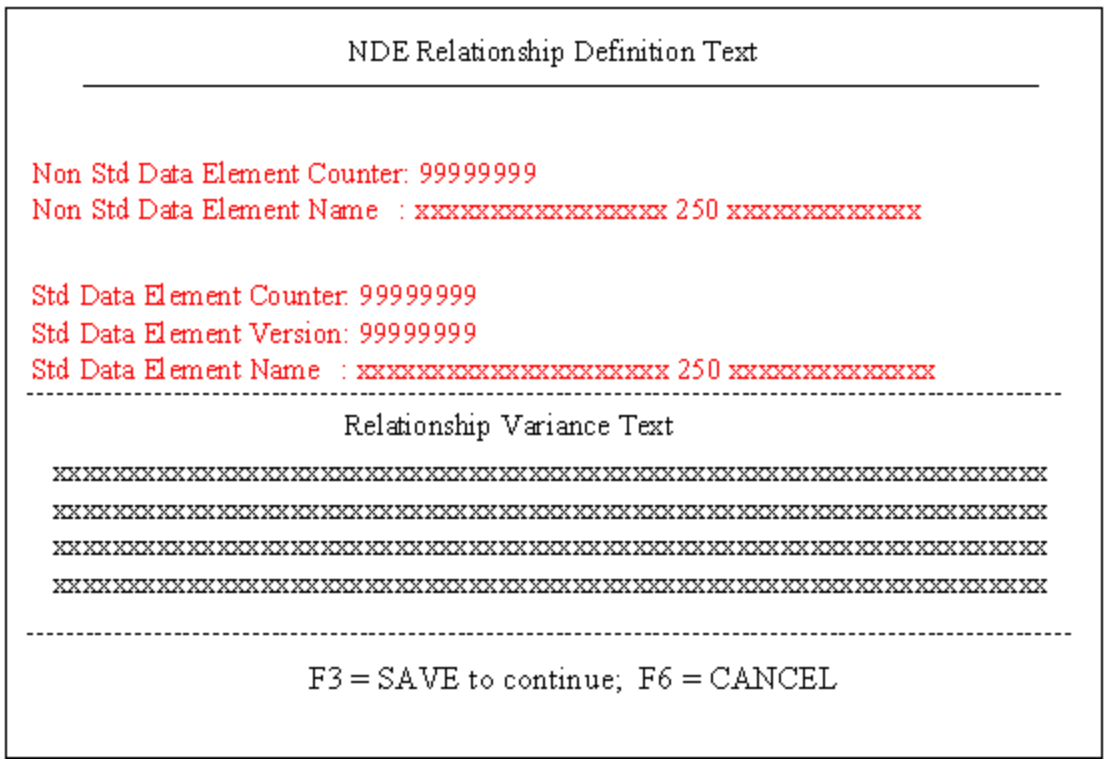

Figure 4: DDDS Screen, Create/Delete Description of Variances Between NDE and SDE Data

Return to Table of Contents

CONCLUSION

Application data elements that match or can be mapped to DOD standard data should be entered in the DDDS as nonstandard data elements. After entering the application data element, the DDDS function for establishing a relationship between a nonstandard and a standard is used to record both matches and mappings to DOD data standards. Importantly, data that can not be matched or mapped to DOD data standards may be entered into the DOD data standardization process.

Since the DDDS is the authoritative source of this information, data administrators and developers are encouraged to make use of this guidance and the DDDS to record the use (mapping or matching) of DOD data standards in their migration systems. Matching and mapping to DOD data standards will facilitate the management and control of data duplication and redundancy, and improve data integrity. This will help to support the goals of DOD Data Administration and will allow for DOD data to be managed as a corporate asset that supports the Department's full range of needs. Comments, recommendations, and inquires on data matching and mapping should be directed to the Defense Information Systems Agency, Center for Computer Systems Engineering, 5600 Columbia Pike, Falls Church, Virginia 22041. Point of contact is Ms. Toni Weir (703) 681-2225 or INTERNET address: weirt@ncr.disa.mil. For DDDS batch load medium questions, contact Theresa Rice, (703) 681-2159 or INTERNET address: rice1t@ncr.disa.mil.

Return to Table of Contents

Appendix A

DDDS Fixed Length Batch Load Format 7 - Non Standard Data Element

Field Name	Start Pos	End Pos	Size	Descriptive Field Name	Values/Comments	Type
NDE_NM	1	250	250	Non standard data element name	Required	AN
NAME	251	350	100	Application Name	Required if application ID is not entered.	AN
APP_U	351	358	8	Application ID	Required if application name is not specified or not unique	AN
NDE_ACCESS_NAME	359	388	30	Access Name	Required	AN
NDE_DOM_VAL_TYP_ID	389	390	2	Domain Value Type ID	Required if available QL = Qualitative QN = Quantitative	A
	391	504	114	Filler	Blank Fill	
NDE_CREATOR_ID	505	512	8	NDE Creator Identifier	Required	AN
NDE_TIMNESS_CAT	513	515	3	NDE Timeliness Identifier	Optional	AN
NDE_JUST_CAT	516	522	7	NDE Justification Category	Optional	AN
NDE_SRCL_TX	523	1521	999	NDE Domain Value Source List Text	Optional	AN
NDE_MX_CHAR_CQY	1522	1525	4	NDE Maximum Character Count Quantity	Required if available.	N
NDE_DOM_DEFN_TX	1526	2524	999	NDE Domain Definition	Optional	AN
NDE_DOM_VAL_ACR_NR	2525	2527	3	NDE Domain Value Accuracy Number Percent	Optional	Nm

NDE_LOW_RNG_ID	2528 2547 20	NDE Quantitative Low Range	Required if available.	N
NDE_HI_RNG_ID	2548 2567 20	NDE Quantitative High Range	Required if available.	N
NDE_SCALE_NR	2568 2569 2	NDE Quantitative Decimal Place Count Quantity	Required if available.	N
NDE_ACRY_ID	2570 2571 2	NDE Quantitative Domain Value Accuracy Identifier	Optional	AN
NDE_FMLA_DEFN_TX	2572 3570 999	NDE Quantitative Formula Definition Text	Optional	AN
NDE_DEFN_TX	3571 4569 999	NDE Definition Text	Required if available.	AN
	4570 4577 8	Filler	Blank Fill	
	4578 4595 18	Filler	Blank Fill	
NDE_UNIT_MEASURE_NM	4596 4625 30	NDE Unit Measure Name	Optional for QN	AN
NDE_SCTY_CLSN_CD	4626 4650 25	NDE Security Classification Code	Optional	AN
NDE_STD_AUTH_ID	4651 4654 4	NDE Standardization Authority ID	Optional	AN
NDE_STWD_NM	4655 4904 250	NDE Steward Name	Optional	AN
NDE_AUTH_DOC	4905 5903 999	NDE Authority Ref. Text	Optional	AN
NDE_CMT_TX	5904 6902 999	NDE Comment Text	Optional	AN
NDE_DATA_TYP_NM	6903 6918 16	NDE Data Type Name	Required if available.	AN

Return to Table of Contents